



# ICAO ENGINE nvPM EMISSIONS DATA SHEET

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: PW812D BYPASS RATIO (-): 4.5  
 UNIQUE ID NUMBER: 05P25PW205 PRESSURE RATIO  $\pi_{co}$  (-): 34.8  
 COMBUSTOR: TALON X  
 ENGINE TYPE: MTF RATED OUTPUT  $F_{oo}$  (kN): 61.6

### REGULATORY DATA

CHARACTERISTIC VALUES:	LTO <sub>mass</sub> /F <sub>oo</sub> (mg/kN)	LTO <sub>num</sub> /F <sub>oo</sub> (particles/kN)	NVPM MASS CONCENTRATION ( $\mu\text{g}/\text{m}^3$ )
LTO/F <sub>oo</sub> AND MAX nvPM <sub>mass</sub>	5.1	2.15E+14	21
AS % OF CAEP/10 LIMIT	-	-	0.2
AS % OF CAEP/11 LIMIT (InP)	0.2	1.1	
AS % OF CAEP/11 LIMIT (NT)	0.6	2.2	

### MEASURED DATA

MODE	POWER SETTING (%F <sub>oo</sub> )	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES*		NVPM MASS CONCENTRATION PEAK nvPM <sub>mass</sub> ( $\mu\text{g}/\text{m}^3$ )
				EI <sub>mass</sub> (mg/kg)	EI <sub>num</sub> (particles/kg)	
TAKE-OFF	100	0.7	0.660	3.4	9.51E+13	
CLIMB OUT	85	2.2	0.544	1.4	5.68E+13	
APPROACH	30	4.0	0.187	0.1	1.24E+12	
IDLE	7	26.0	0.070	0.2	2.54E+13	
LTO TOTAL (kg, mg, number of particles)			253	226	9.54E+15	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE LTO/F <sub>oo</sub> VALUES (mg/kN, particles/kN)				3.7	1.55E+14	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ( $\mu\text{g}/\text{m}^3$ )				3.4	9.51E+13	16

\* Emissions Indices are corrected for thermophoretic loss and fuel hydrogen content

### DATA FOR EMISSIONS INVENTORIES (ESTIMATIONS FOR ENGINE EXIT PLANE VALUES)

MODE	POWER SETTING (%F <sub>oo</sub> )	CORRECTED EMISSIONS INDICES	
		EI <sub>mass_SL</sub> (mg/kg)	EI <sub>num_SL</sub> (particles/kg)
TAKE-OFF	100	4.8	3.43E+14
CLIMB OUT	85	2.5	3.10E+14
APPROACH	30	0.2	5.14E+12
IDLE	7	0.6	1.68E+14

### AMBIENT CONDITIONS

	From		To		FUEL	
	From	To	From	To	HEAT OF COMBUSTION (MJ/kg)	
BAROMETER (kPa)	99.9	101.6			HYDROGEN CONTENT (%mass)	13.83
TEMPERATURE (K)	294.4	300.8			AROMATICS CONTENT (%vol)	17.5
HUMIDITY (kg water/kg dry air)	0.0081	0.0107			NAPHTHALENE CONTENT (%vol)	0.59
					SULPHUR CONTENT (ppm by mass)	220

MANUFACTURER: Pratt & Whitney Canada  
 TEST ORGANIZATION: PW800 Development Engineering  
 TEST LOCATION: Longueuil, Quebec, Canada  
 TEST DATES: 29/07/2022-31/07/2022

### REMARKS

- Export classification: US EAR: 9E991, Outside US EAR: NSR, EIPA (ECL): NSR.
- P&W ER 9208 Rev. D.
- Engine tested: GB0005B01.
- Data acquired using procedures & systems prescribed in Annex 16, Vol. II, Amd. 10.
- Fuel venting report: P&W ER9207 Rev. A.
- Thermophoretic correction applied as per Annex 16 Vol. II, Amd. 9, App. 7, Sect. 6.2.1.
- Data corrected for fuel composition as per Annex 16 Vol. II, Amd. 9, App. 7, Sect. 6.2.2.